

Special Projects in Networking and Communications

Division of Networking and Communications
Research and Infrastructure

DIRECTORATE FOR COMPUTER AND INFORMATION
SCIENCE AND ENGINEERING

Program Announcement
NSF 97- 108

DEADLINES:

Proposals must be received at NSF by:
August 15 and January 15

Deadlines for Special Areas of Opportunity will
be announced on the following Website:
<http://www.cise.nsf.gov/ncri/index.html>

NATIONAL SCIENCE FOUNDATION

Special Projects in Networking and Communications

Special Projects in Networking and Communications provides increased opportunities in support of research in the areas of networking and communications, emphasizing their importance in the emerging convergence of communications and computing. Special Projects meets this goal by funding 1) larger and/or multidisciplinary networking and communications theoretical and experimental research projects than typically supported through the Networking and Communications Research programs, 2) specialized infrastructure for networking and communications systems research, and 3) mechanisms for developing research agendas and enhancing community development.

SCOPE

RESEARCH PROJECTS

Research projects--theoretical or experimental in nature--must focus on networking and/or communications research and may also include relevant research from other areas of computer science and engineering such as distributed systems, operating systems, databases, software, signal processing, control theory, and devices.

- **Theoretical Research**

Special Projects supports theoretical research that focuses on future generations of networks and communications systems and requires small teams of approximately three to four researchers.

- **Experimental Research**

Special Projects includes a wide range of experimental projects to demonstrate proofs of concept for novel networking and communications systems ideas. Projects may range in scope from laboratory experimentation to national collaborations.

Special Projects may also fund networking and communications research that is able to leverage resources from currently established projects. The established projects typically focus on problems from other disciplines, but may require innovative network and communications functionality, thus providing networking and

communications researchers with real-world environments. Such projects may provide facilities, hardware, and/or real network traffic important for network and communications experimental research. Examples of established projects include: NSF's Partnerships in Advanced Computational Infrastructure (PACI),¹ NSF/NASA/DARPA funded digital libraries,² virtual reality-to-virtual reality collaboratories, and Engineering Research Centers.³

- **Projects with Social Science Research**

Special Projects may support partnerships between social scientists and networking and communications researchers in developing networking and communications systems and assessing the systems' social impacts. Example topics include: economics of the Internet; advanced telecollaboration, telescience or distance learning using experimental networks; and network security and its social impacts. Proposals should include networking and/or communications researchers and social scientists. Proposals will be co-reviewed with suitable programs as appropriate.

- **Special Areas of Opportunity**

Special Projects may from time to time announce on the NCRI website⁴ specific research areas for targeted consideration. The areas are expected to be identified through research community input such as workshops or panels.

SPECIALIZED INFRASTRUCTURE PROJECTS

Special Projects may fund specialized equipment or infrastructure needed by experimental researchers in networking and communications to accomplish their work. Some examples are:

¹ <http://www.cise.nsf.gov/asc/paci.html>

² <http://www.cise.nsf.gov/iris/DLHome.html>

³ <http://www.nsf.gov/nsf/nsfpubs/nsf975.htm>

⁴ <http://www.cise.nsf.gov/ncri/index.html>

- **Development of specialized testbed infrastructure for testing of subsystem proofs of concept**

Instrumentation for networking and communications testbeds are apt to be some combination of off-the-shelf, modifications to off-the-shelf, or custom-built special purpose equipment. Requests for this type of infrastructure should be submitted as part of a Special Projects experimental research proposal and not be a proposal solely for infrastructure support.

- **Development and distribution of experimental software and hardware toolkits for networking and communications research**

Special Projects may support proposals to foster the development and distribution of toolkits to the wider communications, networking and related research communities. Two projects of this type have been funded.⁵

RESEARCH AGENDA SETTING AND COMMUNITY BUILDING PROJECTS

In order to enable collaborations and multidisciplinary approaches to networking and communications systems, Special Projects supports activities to formulate research agendas and enhance community development. These activities include, but are not limited to, workshops and planning grants.

- **Workshops**

Special Projects may support workshops in new or emerging areas of networking and communications to bring together researchers from multiple disciplines to identify research agendas for the community. NSF may consider workshop results as it plans future Special Areas of Opportunity.

⁵ <http://www.arl.wustl.edu/~jst/gigatech/ResDist.html> and <http://trail.isi.edu>

- **Planning Grants**

Special Projects may support a very small number of proposals for community building to develop large-scale collaborations around one or more research topics. The need for such a planning grant must be clearly justified in the proposal. Although not required, principal investigators may consider leading one or more workshops to define an emerging area of collaboration before submitting a planning grant proposal. Proposing principal investigators (PIs) are expected to be established researchers. Special Projects' planning grants are not intended for new investigators seeking to strengthen their ability to write competitive proposals.

INQUIRIES

Inquiries about Special Projects may be made to Dr. Darleen Fisher, Program Manager, by email: dlfisher@nsf.gov; fax: (703) 306-0621; or phone: (703) 306-1949.

Potential proposers should discuss their research ideas with the Program Manager preferably with a one-to-two page email summary describing the overall project or by phone. The purpose of the discussion is to ensure that the proposals fit within the scope of Special Projects. Potential proposers should also consult the appropriate Internet web pages for NCRI Division, Special Projects, NSFNET, and Networking and Communications Research Programs⁶ and other NSF programs.⁷

SPECIAL PROPOSAL REQUIREMENTS

Proposals must be prepared in accordance with the instructions contained in the NSF Grant Proposal Guide (NSF 95-27)⁸ and, as appropriate, in accordance with the following additional instructions.

- **Group Proposals**

Group proposals with three or more investigators may contain up to ten pages of overall project description (including overall progress under the appropriate prior award) plus up to two pages per person

⁶ <http://www.cise.nsf.gov/ncri>

⁷ <http://www.nsf.gov>

⁸ <http://www.nsf.gov:80/bfa/cpo/start.htm>

of individual project descriptions (including descriptions of progress under prior awards).

Each proposal should include a discussion of the overall project objectives and a management plan describing how the team will work together, especially addressing how PIs from different departments and institutions will collaborate on the project.

- **Experimental Research Proposals**

Proposals that include an Experimental Research component should justify the need for the experimental aspects of the project and equipment requested, include a project plan with milestones, and include a plan for a technical evaluation of the experiments.

Because experimental research often requires expensive equipment, PIs should consider all available options for obtaining support for equipment. For example, eligible PIs are encouraged to submit separate proposals to the CISE Instrumentation Program (NSF 96-113)⁹ for required equipment.

Networking or communications research proposals developed in conjunction with currently established projects must: a) discuss the innovativeness of the proposed research (i.e. the new projects may not be merely network service or communication-link providers to the other researchers in the project), b) show how the proposed research would use the resources from the currently established projects, and c) provide letters of commitment from the PIs and institutional representatives of the existing projects. The letter should indicate their willingness to work with the networking or communications researchers and explain how the proposed research will interact with the established project.

Experimental research and toolkit development may progress in stages including a) early research, b) development and prototyping, c) full development and testing, and d) distribution, maintenance and up-grades. In order to keep the project timeframe and requested budget at an appropriate level and to allow for NSF evaluation of proposals at each stage of the project, proposals that contain ideas only at the early research or development stage should not include a distribution component. Toolkit development proposals that include

⁹ <http://www.nsf.gov/crossdir/nsf96113/nsf96113.htm>

late development and distribution stages must provide evidence that the community intends to use the proposed toolkits, for example, through workshop reports or with letters of support. The experimental toolkit development proposals should discuss the current state of development; proposed research and development; a comparison with others' work under development which might result in competing toolkits and with related commercially available products; and plans for distribution, maintenance, and upgrades of the toolkits.

PROPOSAL SUBMISSION

FastLane

Proposers for Special Projects Awards are strongly encouraged to submit proposals via FastLane, NSF's system for electronic proposal submission and review, available through the World Wide Web.¹⁰

In order to use NSF FastLane to prepare and submit full proposals to Special Projects, applicants must use a browser that supports multiple buttons, radio buttons within tables, and file upload (e.g., Netscape 2.0 and above.) In addition, Adobe Acrobat Reader is needed to view and print forms. Instructions for downloading these software packages can be found in "How to Use FastLane" on the NSF FastLane Home Page. Detailed instructions on how to prepare and submit a standard proposal using FastLane are available on the FastLane Home Page within the "Information About FastLane" document.

Users may send technical questions and comments to the FastLane staff using the "Send Comments to NSF" feature on this Home Page. In addition, technical questions concerning the use of FastLane can be directed to:

Dan Hofherr
Telephone: 703-306-1142, ext. 4686
E-mail: fastlane@nsf.gov

¹⁰ <http://www.fastlane.nsf.gov>

Mail Submissions

Special Projects also accepts proposals submitted through the mail. In this case, nine copies should be submitted to NSF following the submission instructions in Chapter 1 of the Grant Proposal Guide (NSF 95-27).

Principal Investigators submitting a proposal to Special Projects through the mail are also required to send by the submission deadline one copy of each proposal to:

Dr. Darleen Fisher
National Science Foundation
4201 Wilson Boulevard, Room 1175
Arlington, Virginia 22230
(703) 306-1949

PROGRAM DEADLINES

Proposals must be received at NSF by August 15 and January 15 each year.

Special Projects may announce a separate call for proposals for Special Areas of Opportunity. Deadlines for these proposals will be announced on the NCR Web pages.¹¹

MERIT REVIEW PROCESS

Proposals submitted in response to this program announcement will be subject to the NEW merit review criteria approved by the National Science Board on March 28, 1997 (NSB 97-72).¹² The new merit review criteria are:

What is the intellectual merit and quality of the proposed activity?

The following are suggested questions that the reviewer will consider in assessing how well the proposal meets this criterion. Each reviewer will address only those questions which he/she considers

¹¹ <http://www.cise.nsf.gov/ncr/index.html>

¹² For additional information on NSF's new merit review criteria, see the Merit Review Task Force Final Report on the NSF Home Page at <http://www.nsf.gov/cgi-bin/getpub?nsbmr975>.

relevant to the proposal and for which he/she is qualified to make judgments.

How important is the proposed activity to advancing knowledge and understanding within its own field and across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

The following are suggested questions that the reviewer will consider in assessing how well the proposal meets this criterion. Each reviewer will address only those questions which he/she considers relevant to the proposal and for which he/she is qualified to make judgments.

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

In addition to these generic review criteria, reviewers will be asked to use the following additional criteria when reviewing proposals that respond to this announcement/solicitation. These criteria are as follows:

Group Proposals: effectiveness of management plans showing how team members will collaborate and how the distributed work will be coordinated and accomplished as proposed.

Experimental Research Proposals: appropriateness of the program plans, milestones, and technical evaluation plans for the research to ensure that the proposed scope of work will be accomplished.

Toolkit Development and Distribution Proposals: adequacy of the rationale and demonstrated need for the toolkit and appropriateness of the plans for distribution, maintenance and upgrades to the toolkits.

Planning Grants: adequacy of the rationale for the need for a planning grant and of the principal investigator's explanation of how the proposed results will benefit the targeted research community.

A summary rating and accompanying narrative will be completed and signed by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are mailed to the PI/PD by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

AWARDS

Special Projects expects to make a small number of grants distributed among the different types of proposals depending upon the number and quality of proposals received each year. For example, Special Projects expects to make five to seven research grants. Budgets for research grants are expected to average between \$200,000 and \$500,000 per year for research proposals, although not necessarily at uniform levels each year. Expected project duration is two to four years, depending upon the nature of the problem to be addressed and the type of proposed project. Proposals may include requests for support for research time for individual PIs, postdoctoral researchers, graduate students, equipment, testbed development, salary for technical support personnel, and indirect costs.

Proposed budgets for planning grants to support community and collaboration development and for toolkit development and distribution must reflect the scope of the proposed work and must be clearly justified.

Support for workshops in new areas focusing on networking and communications is expected to be \$10,000 to \$30,000 per workshop.

Whenever Special Areas of Opportunity are announced on the NCR Web pages,¹³ information about award size and duration will be included.

GRANT ADMINISTRATION

Grants awarded as a result of this solicitation will be administered in accordance with the terms and conditions of NSF GC-1, "Grant General Conditions," or FDP-III, "Federal Demonstration Partnership General Terms and Conditions," depending on the grantee organization. Copies of these documents are available at no cost from the NSF Forms and Publications Unit, phone (703) 306-1130, or via e-mail pubs@nsf.gov. More comprehensive information is contained in the NSF Grant Policy Manual (GPM) (NSF 95-26) effective October 1, 1995. The complete text of the GPM is now available on the World Wide Web.¹⁴

GENERAL INFORMATION

The Foundation provides awards for research in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

¹³ <http://www.cise.nsf.gov/ncr/index.html>

¹⁴ <http://www.nsf.gov:80/bfa/cpo/gpm95/start.htm>

Privacy Act and Public Burden. The information requested on proposal forms is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals and may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees; to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and researchers as necessary to complete assigned work; and to other government agencies in order to coordinate programs. See Systems of Records, NSF 50, Principal Investigators/Proposal File and Associated Records, and NSF-51, 60 Federal Register 4449 (January 23, 1995). Reviewer/Proposal File and Associated Records, 59 Federal Register 8031 (February 17, 1994). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Gail McHenry, Reports Clearance Officer, Division of Contracts, Policy, and Oversight, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

Programs described in this publication are in Category 47.070 (Computer and Information Science and Engineering) in the Catalog of Federal Domestic Assistance.

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